

09/926671

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PATENT #2/a

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Hirohiko MURAKAMI et al.

Serial No.: Not Yet Assigned
(PCT/JP01/02885)

Filed: November 30, 2001

For: METHOD FOR PREPARING POROUS SOG FILMS

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

November 30, 2001

Sir:

Prior to the calculation of the filing fees of the above application, please amend the application as follows:

IN THE CLAIMS:

Please amend claims 12, 14 and 15 as follows:

12. (Amended) The method for preparing a porous SOG film as set forth in claim 8 wherein said heat-treatment is carried out in two stages: in a first stage, said porous film is treated at temperatures ranging from 200 to 350°C to thus mainly evaporate said water and alcohol and in a second stage, said porous film is treated at temperatures ranging from 350 to 450°C to thus finish formation of said porous film, while adhering hydrophilic moieties of surfactant to at least an inner surface of holes present in a resulting porous film and to thus cover inner walls of said holes with hydrophobic moieties of said surfactant, to thus form a porous SiO₂ film.

14. (Amended) The method for preparing a porous SOG film as set forth in any of claims 1 to 12 wherein said organic silane is TEOS or TMOS and said surfactant is a halogenated alkyl trimethyl ammonium type cationic surfactant such as lauryl trimethyl ammonium chloride, n-hexadecyl trimethyl ammonium chloride, alkyl trimethyl ammonium bromide, cetyl trimethyl ammonium chloride, cetyl trimethyl ammonium bromide, stearyl trimethyl ammonium chloride, alkyl dimethyl ethyl ammonium chloride, alkyl dimethyl ethyl ammonium bromide, cetyl dimethyl ethyl ammonium bromide, dimethyl ethyl octadecyl ammonium bromide or methyldodecyl benzyl trimethyl ammonium chloride.

15. (Amended) The method for preparing a porous SOG film as set forth in any of claims 1 to 12 wherein said water, acid or alkali and surfactant are used in amounts ranging from 8 to 15 moles, 0.5 to 1.5 mole and 0.1 to 0.4 mole, respectively, per one mole of said organic silane.

REMARKS

The above amendment is believed to place the claims in proper condition for examination.

Early and favorable action is awaited.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned “Version with markings to show changes made.”

In the event there are any additional fees required, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 12, 14 and 15 have been amended as follows:

12. (Amended) The method for preparing a porous SOG film as set forth in claim ~~8~~ wherein said heat-treatment is carried out in two stages: in a first stage, said porous film is treated at temperatures ranging from 200 to 350°C to thus mainly evaporate said water and alcohol and in a second stage, said porous film is treated at temperatures ranging from 350 to 450°C to thus finish formation of said porous film, while adhering hydrophilic moieties of surfactant to at least an inner surface of holes present in a resulting porous film and to thus cover inner walls of said holes with hydrophobic moieties of said surfactant, to thus form a porous SiO₂ film.

14. (Amended) The method for preparing a porous SOG film as set forth in any of claims 1 to ~~13~~ 12 wherein said organic silane is TEOS or TMOS and said surfactant is a halogenated alkyl trimethyl ammonium type cationic surfactant such as lauryl trimethyl ammonium chloride, n-hexadecyl trimethyl ammonium chloride, alkyl trimethyl ammonium bromide, cetyl trimethyl ammonium chloride, cetyl trimethyl ammonium bromide, stearyl trimethyl ammonium chloride, alkyl dimethyl ethyl ammonium chloride, alkyl dimethyl ethyl ammonium bromide, cetyl dimethyl ethyl ammonium bromide, dimethyl ethyl octadecyl ammonium bromide or methyldodecyl benzyl trimethyl ammonium chloride.

15. (Amended) The method for preparing a porous SOG film as set forth in any of claims 1 to ~~14~~12 wherein said water, acid or alkali and surfactant are used in amounts ranging from 8 to 15 moles, 0.5 to 1.5 mole and 0.1 to 0.4 mole, respectively, per one mole of said organic silane.

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